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### PUBLIC RELATIONS ASPECTS OF CONSULTING SANITARY ENGINEERING WORK

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## PUBLIC RELATIONS ASPECTS OF CONSULTING SANITARY ENGINEERING WORK

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Let it be said at the outset that the speaker is not responsible for the inclusion of this subject on the program. That determination, so far as he knows, was made by the Program Committee. However, the fact that a committee of sanitary engineers should consider this subject an appropriate topic for discussion at an annual meeting of the Society is in itself significant. What are the current or potential conditions in the field normally served by the consulting sanitary engineer that warrant consideration of the public relations aspect of his work? Are public relations policies as commonly practiced in the conduct of commercial enterprises applicable to engineering practice?

Certainly by itself economic consideration of the merits of engineering projects is frequently less applicable to sanitary engineering undertakings than to those in other engineering endeavors. Pollution abatement works, as we know, commonly do not benefit the persons who contribute the waste and who are expected to pay the costs of abatement. On the contrary, the downstream neighbor is the beneficiary. Sanitation projects differ from street, public-building, school, bridge or similar tangible public improvements with which they compete. Although pollution abatement works also yield tangible benefits yet to put a dollar sign on these many benefits would be totally unrealistic. Thus, pollution abatement which alone is an important facet of the consulting sanitary engineer's work does not generally materialize without stimulation. A comparable situation, of course, exists in the field of industrial waste treatment.

What has been that stimulation in the past? Scanning the last 50 years of pollution abatement in the United States there appears to be three major periods, each with its characteristic stimulus. From the turn of the century and extending through the late twenties, "Dire Necessity" was the compelling force. Pollution abatement projects were initiated in cases of serious pollution and grave endangerment of public health. Such projects, nevertheless, moved slowly. The time that elapsed between beginning of talks and commencement of operation for many such projects averaged 25 years. For the period 1930 to 1940, "Pump-priming" or Federal assistance was the incentive. The 25-year time element of the former period was materially reduced. For the period 1940 to the present, legal compulsion in the background of which lie interstate compacts and state pollution control boards, has been the prime mover.

How has the consulting sanitary engineer fared during this half-century of slow-starting but gradually accelerating sanitation progress? Based on the dollar volume of contracts in water works and sewerage (as reported in

the ENR back to 1913) it is estimated that the total investment in these two facilities in the United States in the last 40 years is about seven and one-quarter billion dollars. Adjusted to 1953 dollars, this is equivalent to sixteen and one-third billion dollars. Certainly, it appears from this that the nation's relatively few sanitary engineers (about 6,000 out of an engineering population of 600,000) and even fewer engineers in private and consulting practice have been fairly busy, whether it is because of or in spite of their knowledge and practice of public relations.

Will the consulting engineer fare as well in the future? To answer this question let's take a look at the sanitary engineering job which looms ahead.

Sanitary engineering works, their need and their size are closely related to population. In the early '30's, with a decline in the offing, the forecast was about 100,000,000 people in the U. S. by 1950. Actually, the population passed the 160,000,000 mark in August of this year. Present figures lean toward 200,000,000 or more by the end of the century. The consultant's field extends to other parts of the world as well. World population, now 2,400,000,000, is increasing at a rate of 1 per cent per year. This can mean 4,100,000,000 people by the year 2000 and almost 7,000,000,000 (assuming production of food keeps up with it) by the year 2050. Pinning it down, this means a global increase of 25,000,000 people each year.

So much for the general picture. More specifically, however, in the U. S., water works and sewerage works actually proposed but not yet let to contract stood at \$1.56 billion and \$2.84 billion respectively at the mid-year, or a total of \$4.4 billion, according to the Engineering News-Record backlog. The municipal research division of Dun & Bradstreet estimate the needs - that is, those actually proposed as above, as well as otherwise required, to be \$10 billion. In 1951, the United States Public Health Service reported that without exception, every major river drainage basin in the country requires the construction of new industrial and municipal waste treatment plants, replacements, enlargements, or additions. This agency estimated the following national totals required to accomplish the goal then envisioned:

#### Municipal.

	<u>Number</u>	<u>Population To Be Served</u>
New Sewage Treatment Plants	4,209	31,010,200
Replacements	722	3,508,400
Additions or Enlargements	1,645	25,699,700
Undetermined	1,627	-

#### Industrial.

New Waste Treatment Plants	2,793
Replacements	98
Additions or Enlargements	591
Undetermined	5,532

With nearly 11,000 factory outlets discharging wastes to the water courses of the Country, the waste problem from industry alone in 1950, as estimated by the Public Health Service, was equal to the then population of the Country, or about 150,000,000 people.

While the water pollution problem is formidable the water supply picture also is of mounting interest. New industrial processes gulp millions of gallons of water daily. Industrial production has doubled in the last 15 years. The National Association of Manufacturers points out "a shortage of water

for industrial purposes, just as surely as a shortage of manpower, of raw materials, or of capital, could defeat our hopes for future growth and prosperity, and even imperil our national safety". Recurrent water shortages in some cities have brought bathless days and long supply lines. We now find the 100 gallon a day per capita water consumption standard is giving way to 200 gallons a day in industrial and other areas.

Sewerage, water supply and industrial wastes, in all their divisions, are major aspects of the consulting sanitary engineer's work. Garbage and rubbish disposal, drainage, flood control and general hydraulic problems, are also fields of active endeavor for the sanitary engineer consultant. More recently, the sanitary engineer has also joined the fight for pure air in which hundreds of municipalities have become interested. To evaluate the extent of the needed work to be accomplished in these branches of the engineer's activities is not the purpose of this paper. Suffice it to say, however, that the task, dollar-wise, is sizeable.

Consider sewage treatment only. Authoritative estimates indicate the annual expenditure required for treatment works to meet a proposed 10-year program of pollution abatement from municipal sources alone is \$500,000,000. It is further estimated that industrial waste abatement will require "an equal or larger sum".

Basically the objective of so-called "public relations" is to develop greater demand for the engineer's services. It may, therefore, seem that with this large task ahead the consulting sanitary engineer need not be too concerned about public relations. After all, who, if not the consulting engineer, will accomplish a large part of the engineering work involved? But will he? Will he serve the public interest properly if he neglects the public relations aspects of his work?

Firstly, unless there is a transition to or support by "public demand", will legal compulsion alone be sufficient to increase the tempo of pollution abatement work nearly 3 to 4 times the present, which is necessary if the required program is to be accomplished? On the other hand, if "public demand" is to be stimulated for this purpose, what kind of public relations activities on the part of the engineering consultants will most benefit such a program?

Secondly, the increased activities in the sanitation field have also increased the available services in the field. There are now specialists within a specialized field, all the way from the applied-scientist who develops new devices or new processes to the engineer who takes over where the applied scientist leaves off.

Thirdly, the major pollution abatement work looming ahead is that concerning industrial waste disposal. Will industry seek the services of the consulting sanitary engineer? Does industry know of his existence, and how he functions, or what he has to offer?

As recently as 10 years ago, for example, a large steel mill in Pennsylvania, anxious to solve a pollution problem because it had been so ordered by the State Authorities, tried a number of "home made" remedies but without success. The mill finally advised the State Agency that it was out of ideas but would be glad to try anything the agency might suggest. The State Authorities suggested the mill employ the services of a consulting sanitary engineer. It is probably hard to believe this, but on the basis of correspondence on this

matter it appeared that this was the first time the management was aware of the availability of such specialized engineering services.

Some work in public relations is currently done by equipment manufacturers, but slanted only from the viewpoint of promoting the sale of their products. Had the management of the above mill scanned the Advertisements of the trade journals it might have found "guidance" and at no cost. Let me read a few sentences from current advertisements:

"Our engineers, who have pioneered this method of sanitary-fill across the country, help you select your site and train your operators".

"Our skilled engineers will gladly work with you in making plans and specifications for sewage and industrial waste treatment plants and water works where ----- (Company) equipment has use".

"----- (Company) will analyze your water supply, make recommendations without obligation".

"If you have a knotty problem of industrial waste treatment, it makes sense at absolutely no cost to find out how we may be able to help solve it. Just write a letter".

The technical staffs of sanitation equipment manufacturers are, of course, a skilled and highly competent segment of our profession and the foregoing quotations are not intended as a criticism of their ability. Certainly if such policies of offering engineering advice and design service by equipment manufacturers served the best interests of the public, one could not take issue with them. But where competition and profit necessarily and properly must be their primary consideration, the public interest is less than fully protected. We might consider a pharmaceutical manufacturing company advertising the fact that it will gladly diagnose the ills of the reader and prescribe the medicine where its products have use. What might ultimately happen to the doctor may be of minor concern. But, what about the patient? And what, in the long run, would happen to the pharmaceutical manufacturer?

It is primarily in achievement that the consulting engineer's obligations differ somewhat from those who offer advice, engineering, and equipment all wrapped up in one package. In the sanitary engineering profession the engineer's obligation is not only to the client but to the public as well. This is because the facilities he designs, whether for public or private enterprise, are in most instances intended chiefly for public protection. He would be remiss in his obligations to his profession and to society if he failed to consider the effect of his designs on the public welfare and safety.

From the consulting sanitary engineer's viewpoint two principal factors underlie the reasons for a basically different approach to engineering design for industry compared to that for municipalities. The first of these is Financing; the second Change. In industrial operations, capital costs are not financed over long term bond periods. It, therefore, is essential that they be minimized, frequently even at resulting increase in operating costs, as well as by the use of materials and equipment of lesser life-span than normally employed. Both of these procedures would generally be frowned upon in municipal practice. Change in industrial operations, in character of wastes produced, in growth or decline of markets and hence of output, are conditions essentially different from those prevailing in municipal activities and, therefore, affect design considerations.



Recently an airplane manufacturing concern had doubled its personnel. The covered sludge-drying beds provided in the initial design of the disposal facilities serving this plant had become inadequate. The company decided to install a series of infra-red lamps strung across the beds at 6-foot centers, about two feet above the surface, together with several 36-inch fans in order to hasten evaporation and make the inadequate area carry the additional load. Resulting electric energy costs in terms of overall sewage plant operation were significant, but in terms of factory operation were not noticeable. The company's position was that until events determined that the large personnel increase was to be permanent, additional operation costs of sewage treatment were to be preferred over further capital costs.

This illustration of a minor point may seem far afield of this paper. Yet it illustrates the need for the consulting sanitary engineer to be aware of the special problems of private industry as compared with municipal work.

Consulting sanitary engineer firms can offer to industry an integrated service, including (a) preliminary evaluation of the problem; (b) development and pilot plants; (c) process design and engineering; (d) project engineering; (e) related structural, hydraulic, mechanical engineering; (f) procurement; (g) supervision of construction; (h) initial operation, and in none of these categories is there likely to be any tie-in sale of an item he manufactures which might even remotely influence his judgement.

Recognizing the services he is in a position to render, what can the sanitary engineer do to acquaint industry with these facts? What is more important, what can he do to help let the community at large understand and know of the job that must be done?

The answer is clear. "We talk too much to one another in an esoteric language. We should talk instead the language of the street to the people of the street". In one way or another this has been said before, but is worth repeating. Yet how can we put this advice into effect? Let us consider first the manufacturers' advertisements.

The manufacturer who wants to sell his sanitation equipment advertises in the technical journals. That's fine, as far as it goes, but it does nothing to stimulate the three or four-fold increase of pollution abatement work necessary if the gap between pollution and abatement is to be narrowed. Public recognition of the problem and demand for relief will provide business return for the manufacturer by sheer momentum of its accomplishment. Therefore, his message, worded differently, perhaps also giving recognition to the profession, belongs not in the engineering journals only, but more properly in the newspapers of the country, in the magazines women read in their living rooms, in the weekly news and business journals one reads on trains and planes. We have today a far more responsive population than ever before. This is due not only to great increases in facility of communication and of transportation, but also to a new attitude on the part of the public. Brought to them properly, the facts will interest the public. And public interest will ultimately grow to public demand. The story of fluorine as a weapon against tooth decay made the popular and best-seller magazines of the country some 3 to 5 years ago, and is still doing so today. Result? In a relatively few years following its introduction, the use of fluorine in public water supplies has this year reached a stage where nearly one-eighth of the United States population now receives its benefits.

Perhaps this type of program is too big a job for the handful of specialized equipment manufacturers in our field. Should not, therefore, this program be supported by other basic industries, by private foundations concerned with the promotion of the public welfare, and by engineer groups or professional societies?

The importance of public relations as applied to various high-level functions of a technical and professional nature has been fully recognized in other professional fields, some conducted by the professions, others supported by its allied groups. Today, for example, a campaign is underway in behalf of the doctor who is being depicted as the man having the know-how with which to apply the developments of pharmaceutical research. This is counteracting the growing trend toward self-medication, and the resorting to unrecognized practitioners.

When the chain drug store invaded the realm of the apothecary and pushed the latter to the rear of the establishment behind his bottles of pharmacopaea, the large pharmaceutical houses immediately perceived that if the trend continued, the position of the pharmacist, his professional status, and their market for drug products would be depressed in favor of the ready-made merchandise on the counter. They needed the knowledge and skill of the pharmacist to interpret their product to the public. Therefore, they developed a public relations program designed to explain the background, the professional skill, and the importance of the pharmacist to the public.

Of all the professional categories, the role of the consulting sanitary engineer is least understood by those whom he is equipped to serve. A member of a newly organized sewerage authority, confronted with a 10-million dollar sewage treatment project, inquired at its organization's meeting of the function of its consulting sanitary engineer, whose fees were to total some \$600,000 to \$700,000. Eminent bond counsel for the Authority gratuitously volunteered the explanation that the duties of the engineer would be to approve the Authority's annual budget and report annually on whether or not the facilities were being adequately maintained.

It must be recognized that the consulting sanitary engineer offers a tangible service and that he actually is the prime mover toward tangible achievements. What is lacking is the desire or perhaps the professional know-how on his part to interpret the services, achievements, potential application of the knowledge, facilities and cumulative experience of the engineering firm for the information of industry and the public.

The opportunities for creating public demand for the things that sanitary engineering firms do-not because of resulting work for the engineers, but primarily because the public in many areas should have these things done, have never been greater than they are today. Elevating the services in health to the highest council table in the land, the President's Cabinet, where such problems are considered with other national problems, offers new opportunities for sanitation accomplishment. Enormous advances in presentation of ideas have taken place over the years in many fields. These are also available to the engineer. The press, the radio and TV are as open to stories and comment concerning sanitary engineering achievements as they are to those in other fields of endeavor. What, for example, might be accomplished if the "Readers' Digest" were to carry several articles a year on diverse phases of environmental health, mentioning the title Sanitary Engineer and making clear its meaning? Sanitary Engineer, a term familiar mainly to



the engineering profession, must also become a familiar and meaningful appellation to the general public. Certainly this is a problem in education, but it is a job which can be effectively done.

Specific methods can be instituted by group action to accomplish much of this with imagination and on the highest ethical level.

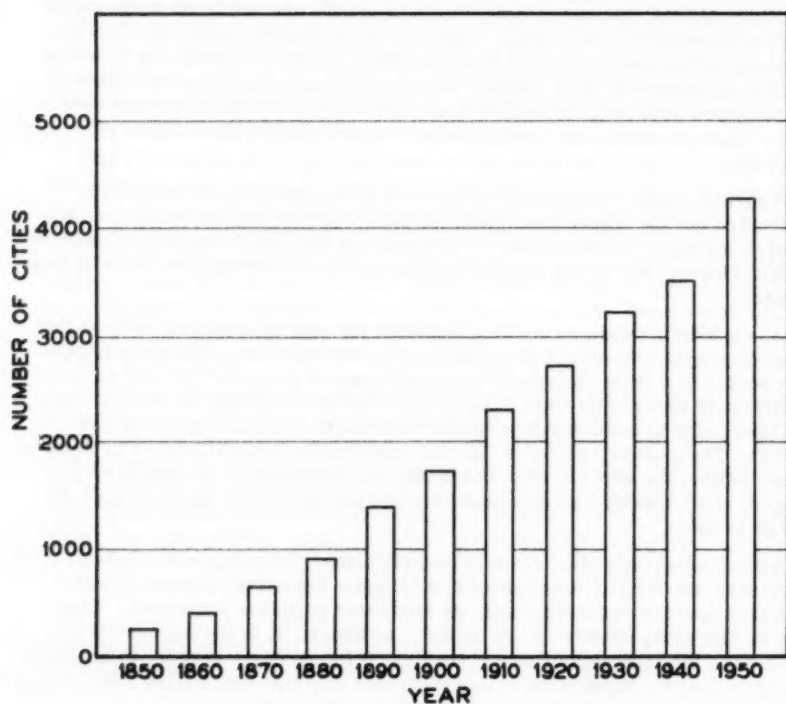
The problem of selling, if you wish to use that term, which confronts the consulting sanitary engineers is not similar to that confronting the typical private business. Business may set out to create new wants or may content itself with satisfying old wants. Thus far the similarity may hold. But the viewpoint of business is highly individualistic, in that the endeavor is not so much to increase the total national consumption as to increase the share of consumption which will be reflected in purchases from the individual concern. Here, however, our methods must depart sharply from those of business.

A formal public relations program on a group basis would seem to be warranted but the object again must be that of promoting the public welfare through a proper understanding of the need for and public support of sanitary engineering works, rather than for the promotion of the engineer's individual welfare.

As an individual the consulting engineer can and should contribute to this general program to a certain extent by his own activities. There is excellent advice in a little Defense Department manual prepared for our soldiers in Germany which tells them "Don't try to force democracy on the Germans, but take pains to explain things about America to them if they seem interested". The sanitary engineer has this opportunity many times. The newspaper editor, the service club, the women's organization, the taxpayer's league, are interested groups, and the engineer must take pains to explain things to them.

Industrial groups offer similar opportunities. Organizations of plant engineers and facility managers exist in many industrial areas. These officials are now concerned with air and water pollution abatement. They are an attentive, interested and grateful audience. It is the engineer's obligation in the interests of public service, if for no other reason, to acquaint this group with causes, effects and remedies and how specialized engineering service may best be used in achieving a proper solution.

Finally, it has often been said that a good tool should not be noticed for itself, but for the work it does. So it might be said about the consulting sanitary engineer. He will be noticed best for the quality of his performance. Therein, perhaps, lies his greatest single continuing opportunity for advancing the public relations aspects of his work.



GROWTH IN NUMBER OF CITIES  
IN THE UNITED STATES

Source: Water Pollution Series No.1, Federal  
Security Agency, Public Health Service

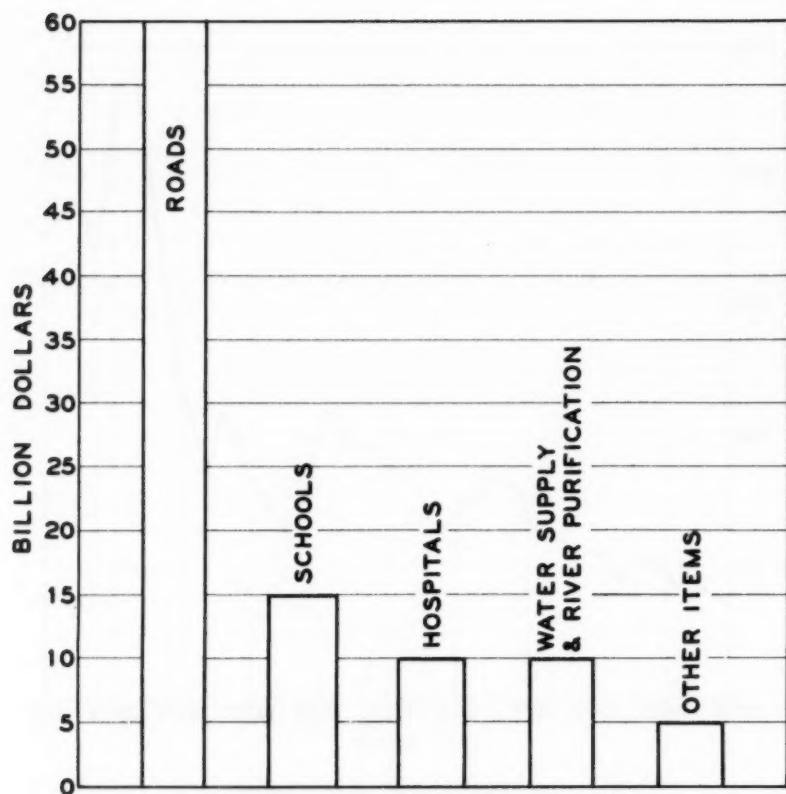
Figure 1



GROWTH OF INDUSTRY  
INDEX OF RISING INDUSTRIAL PRODUCTION IN THE  
UNITED STATES (1935-39 AVER. EQUALS 100)

Source: Water Pollution Series No. 1, Federal  
Security Agency, Public Health Service

Figure 2



**COMPETITION FOR MUNICIPAL IMPROVEMENTS**  
(Back-log of needed municipal improvements from  
"Nation's Business", July, 1953)

Figure 3



Figure 4

**MINIMIZING CAPITAL COSTS IN  
INDUSTRIAL SEWAGE TREATMENT**  
(Infra-Red Lamps To Speed-Up Sludge  
Drying On Limited Bed Area)

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